

THAT WHICH IS CLAIMED:

1. A projection display apparatus comprising:

a plurality of projection display units for projecting and displaying images based on supplied video signals;

5 a nonplanar screen to which the projection display units project the images;

an image dividing unit for dividing an incoming video signal into divided video signals for the projection display units, respectively; and

image transforming means for changing the field angle of images represented with the divided video signals according to relationships of the position of the corresponding projection display units, the position of areas of the nonplanar screen to which the corresponding projection display units project the images, and the position of an audience, wherein

each of the projection display units receive the changed video signal from the image transforming means and project an image to the nonplanar screen according to the received video signal.

2. The projection display apparatus of claim 1, wherein

the nonplanar screen corresponds to an inner wall surface of a substantial hemisphere; and

20 the projection display units are arranged in the vicinity of the center of curvature of the nonplanar screen, or on a straight line passing through the center of curvature of the nonplanar screen and the center of the nonplanar screen.

3. The projection display apparatus of claim 1, wherein

25 the image transforming means have a frame memory configured to store the divided video signals, a positional information memory configured to store positional information of pixels, and a digital filtering data memory configured to read video signals from the frame memory and store the read video signals; and

the image transforming means sequentially write the divided video signals in the frame memory, store new positional information for pixels to convert in the positional information memory, and according to the new positional information in the positional information memory, transfer as and when needed video signals related to regions used for

digital filtering from the frame memory to the digital filtering data memory.

4. An adjusting apparatus for adjusting an image transforming quantity of the image transforming, employed for a projection display apparatus having projection display units for projecting and displaying images according to supplied video signals, a nonplanar screen to which the projection display units project the images, and image transforming means for changing the field angle of images to display according to relationships of the position of the projection display units, the position of areas of the nonplanar screen to which the projection display units project the images, and the position of an audience, comprising:

an adjustive signal generator for generating an adjustive signal according to which the projection display units project adjustive images to the nonplanar screen;

a plurality of photographing units for photographing the projected adjustive images;

a measuring unit for three-dimensionally measuring the projected adjustive images according to video signals provided by the photographing units; and

a transformation processor for providing the image transforming means with image transforming information based on a measurement result provided by the measuring unit.

5. The adjusting apparatus of claim 4, wherein

the plurality of photographing units are supported on a common frame and are configured to be moved together with the frame so as to two-dimensionally change photographing directions for the three-dimensional measurement.

6. The adjusting apparatus of claim 4, wherein

the image transforming means include a frame memory configured to store the video signals, a positional information memory configured to store positional information of pixels, and a digital filtering data memory configured to read video signals from the frame memory and store the read video signals; and

the image transforming means sequentially write the video signals in the frame memory, store new positional information for pixels to convert in the positional

information memory, and according to the new positional information in the positional information memory, transfer as and when needed video signals related to regions used for digital filtering from the frame memory to the digital filtering data memory.